United States Patent [19]

Tanabe

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[54] **PIN PLUG**

[76] Inventor: **Shigeru Tanabe,** No. 3-10-15, Kita-Koiwa, Edogawa-ku, Tokyo, Japan

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[30] **Foreign Application Priority Data**

Oct. 23, 1978 [JP] Japan ..... 53/145688[U]

[51] **Int. Cl.**[3] **H01R 13/58**

[52] **U.S. Cl.** ..... **339/105;** 339/177 R

[58] **Field of Search** ..... 339/105, 177 R, 177 E, 339/182 R, 183

[56] **References Cited**

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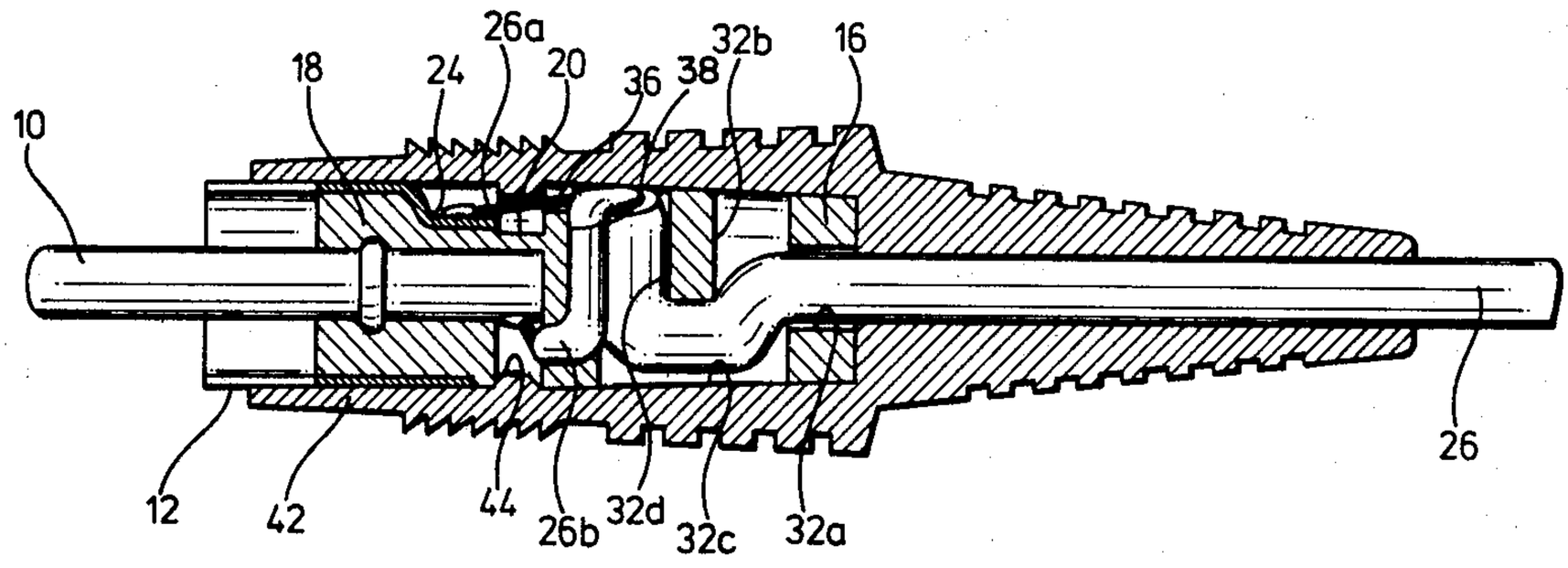
Primary Examiner—Neil Abrams

[57] **ABSTRACT**

There is disclosed a pin plug comprising a rod electrode and a cylindrical cap electrode encircling coaxially the rod electrode and a base body for supporting the rod electrode and the cap electrode. The base body includes a head section for supporting the bar electrode and a body section providing continuous axial and radial grooves for receiving the connecting cord with an annular space formed therebetween and with a stem portion coupling the head section with the body section.

5 Claims, 4 Drawing Figures



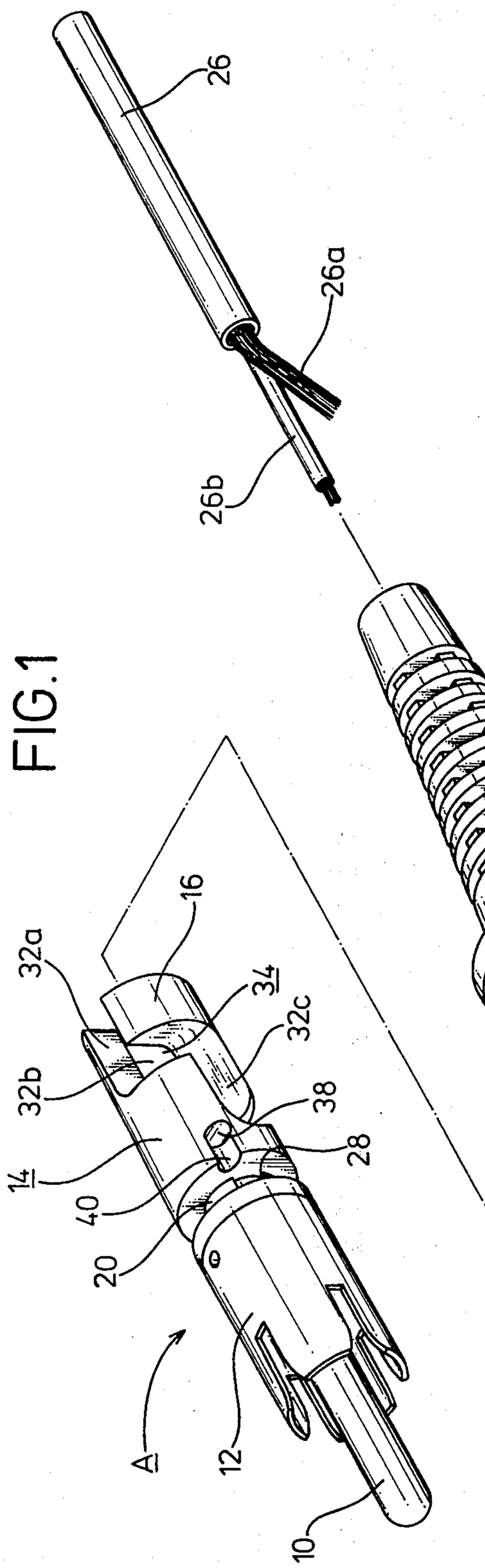
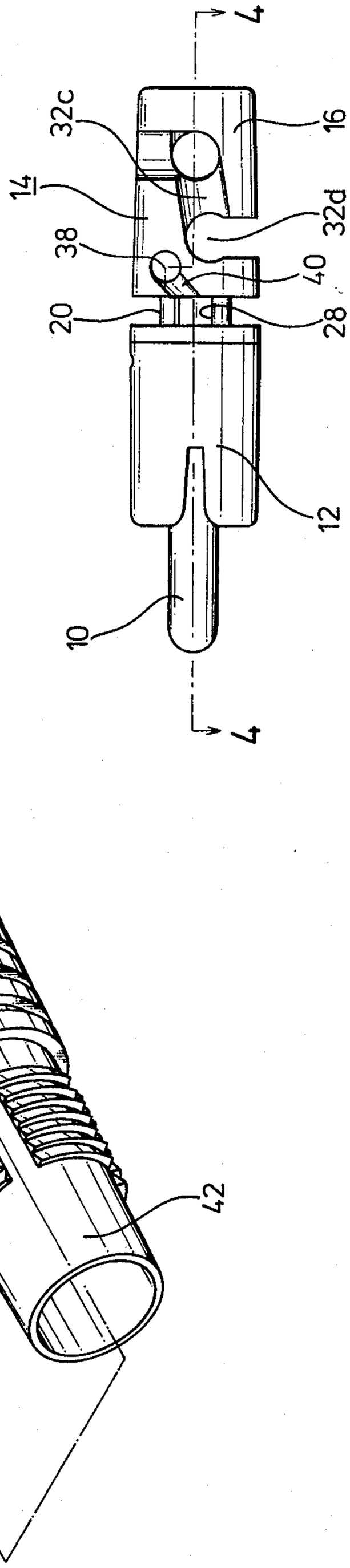

26
26a
26b
14
16
32a
32b
32c
34
38
40
28
20
12
10
A

FIG.1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32c
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32d
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40
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12
10
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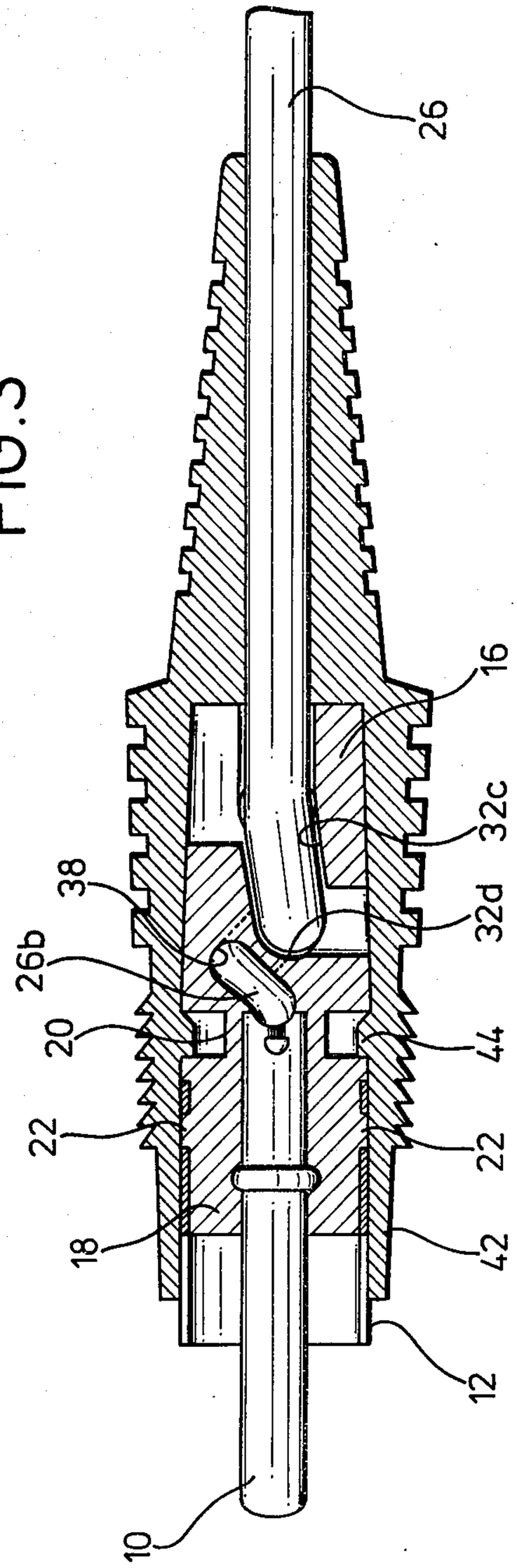
42

FIG.2

FIG.3


26
16
32c
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32d
26b
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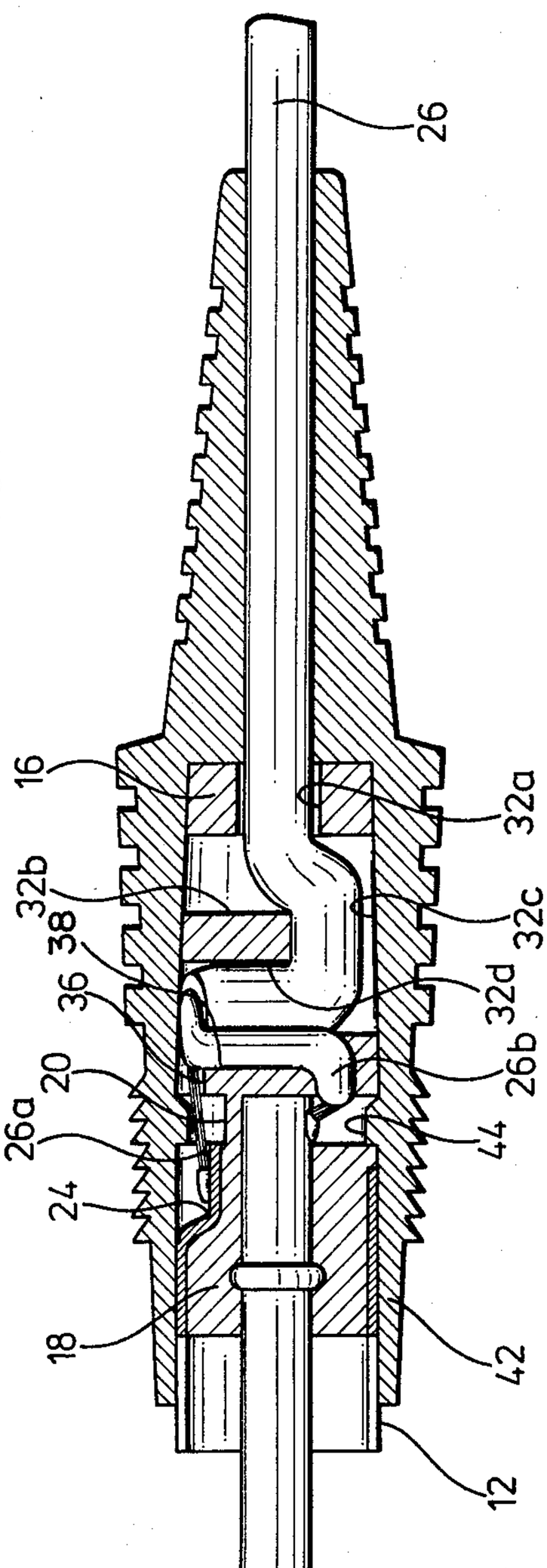
FIG.4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PIN PLUG

TECHNICAL FIELD OF INVENTION

This invention relates to a pin plug and more particularly to a connector for tightly connecting a connecting cord to a pin plug.

BACKGROUND ART

Various types of the pin plug have heretofore been commercially available and example of such the pin plug may be found in the Japanese utility model publications Nos. 45-16025, 51-41192, 53-50071 and 53-50070.

A problem of the prior pin plug heretofore used in the audio equipment for example is that a connection between the plug and the connecting cord is unstable and the latter is apt to disengage from the former or to cause a defective contact because the plug is usually disengaged from a jack by pulling the connecting cord.

SUMMARY OF THE INVENTION

With the foregoing in mind the inventor provides in accordance with the invention a pin plug in which the connecting cord is tightly fixed to a plug terminal without causing any deficiencies such as disengagement of the connecting cord from the electrode or defective contact therewith.

In the form of the invention herein disclosed the pin plug comprises a bar electrode, a base body for holding said bar electrode, a cap electrode coaxially and insulatedly encircling said bar electrode and a flexible sleeve for coating said base body wherein the base body is provided in its circumference with continuous axial and radial grooves for receiving a connecting cord to be connected to either the bar electrode or the cap electrode.

BRIEF DESCRIPTION OF THE DRAWINGS

Objects and attendant advantages of the invention will be apparent from the following disclosure taken in conjunction with the accompanying drawing wherein:

FIG. **1** is an exploded perspective view of the pin plug in accordance with the present invention;

FIG. **2** is a front elevation of the plug body;

FIG. **3** is a longitudinally sectioned view of the plug body of FIG. **2** with a sleeve and a connecting cord; and

FIG. **4** is a longitudinally sectioned view taken along the line **4—4** of FIG. **2** with the sleeve and the connecting cord.

BEST MODE FOR CARRYING OUT THE INVENTION

Referring now to the drawing wherein like reference character refer to like part a pin plug in accordance with the instant invention is shown at A in FIG. **1**.

The pin plug body A is generally comprised of a rod electrode **10** and a cylindrical cap electrode **12** encircling coaxially the rod electrode **10** and a base body **14** for supporting the rod electrode **10** and the cap electrode **12**.

The base body **14** is composed of insulating material and includes a body section **16** and a head section **18** connected therewith through a stem **20** and through the head section **18** is passed the rod electrode **10** whereas the cap electrode **12** is mounted around the head section **18** with projections **22** and thus electrically insulated from the rod electrode **10**. In the circumference of the head section **18** is provided a recess **24** in which a terminal end portion of the cap electrode **12** is connected with a lead wire **26***a* of a connecting cord **26**.

In the circumference of the stem **20** is formed a window **28** to expose a part of the rod electrode **10** passing through the stem **20** for connection with a lead wire **26***b* of the connecting cord **26**.

In the circumference of the body section **16**, there are provided in continuation an axial groove **32***a*, a radial groove **32***b*, an axial groove **32***c* and a radial groove **32***d* to form a single continuous groove of substantially Z-shape in which the connecting cord **26** is tightly received in rigid contact with the corners of the Z-groove **34** as hereinafter fully described. The lead wire **26***a* is connected to the terminal of the cap electrode **12** through a channel **36** provided in an end of the body section **16** in continuation with the radial groove **32***d*. While, the lead wire **26***b* is connected through an aperture **38** provided in the end portion of the body section **16** in parallel with the radial groove **32***d* and a short groove **40** in communication with the aperture **38** to the rod electrode **10** exposed through the window **28**.

The lead wires **26***a* and **26***b* are preferably connected to the electrodes **10** and **12** at symmetrical positions across the bar electrode **10** to avoid undesired occurance of short circuit.

In assembly of the attachment plug according to the invention, the rod electrode **10** and the cap electrode **12** are previously placed in a convenient metal mold and then the metal mold is filled with an insulating material such as plastics to form the base body **14** and finally the connecting cord **26** is guided through the Z-shape groove **34** in tight contact with each corner of the Z-groove **34**.

The reference numeral **42** stands for a flexible sleeve which is generally made of insulating soft plastics or rubbers and adapted to coat the base body **14** with the cap electrode **12**.

In inner circumferential wall of the sleeve **42** there is provided an annular ridge **44** which falls in a space formed between the head section **18** and the body section **16**. It will be appreciated that the sleeve **42** is constituted removable from the base body **14** for convenient checking of accident to be caused and repair thereof.

Further, as compared with the conventional structure here even when the connecting cord and the electrodes **10** and **12** are molded together, the molding is performed at more reduced time without entailing any likelihood of melting the connecting cord **26** due to an avoidance of elevated temperature under an extended molding operation.

As hereinbefore described, the radial groove **32***d* is provided in normal to the length of the pin plug and passing through the base body. Accordingly, the connecting cord **26** is tightly received in the groove **34** in a zig-zag form on account of the presence of the radial grooves, so that any separation or disengagement of the connecting cord **26** may be perfectly prevented, because a tension generated when the connecting cord **26** is drawn is absorbed in the corners of the Z-groove and can not reach at the connecting part of the electrode with the connecting cord.

As hereinbefore fully described, the pin plug according to the invention has an improved durability even with a simple structure which is convenient for mass production.

Without further elaboration, the foregoing will so fully illustrate my invention that others may, by applying the current or future knowledge, readily adapt the same for use under various conditions of service.

What is claimed is:

1. A pin plug for attachment to the lead wire of a connecting cord comprising a bar electrode and a cap electrode and a base for holding said bar electrode and said cap electrode coaxially and insulatedly from each other and a flexible sleeve for coating said base, said base including a head section for supporting said cap and bar electrodes and a body section provided in its circumference with at least one continuous groove for receiving the lead wires of a connecting cord, said continuous groove comprising at least three tandemly arranged groove portions, at least one of said groove portions extending axially and one of said groove portions extending radially of said base, said axial and radial groove portions alternating with each other, said base being formed with an annular space between said head and body sections for connection of one of said lead wires to said cap electrode and a stem portion coupling said head and body sections, and through which said bar electrode extends for connection of the other lead wire and at least one hole in communication with the last radial groove for passing the lead wire to said stem portion to be connected to the bar electrode.

2. A pin plug as claimed in claim 1, wherein the stem portion is provided with a window to expose the bar electrode for connection with the lead wire derived from the connecting cord.

3. A pin plug as claimed in claim 1, wherein the cap electrode is provided with a recess for receiving a terminal end of the lead wire to be connected therewith.

4. A pin plug as claimed in claim 1, wherein the flexible sleeve is provided in its circumferential wall with an annular ridge which is adapted to be received in the annular space formed between the head section and the body section.

5. A pin plug as claimed in claim 1, wherein the marginal edge portion of the base body is provided with a recess in communication with the last radial groove for receiving another lead wire to be connected to the cap electrode.

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